DEVELOPMENT AND DISTRIBUTION OF A LOCAL GOVERNMENT WATERSHED PLANNING TOOLBOX

Submitted to:

Coastal Services Center
National Oceanic and Atmospheric Administration
2234 South Hobson Avenue
Charleston, SC 29405-2413

Submitted by:

Coastal Zone Management Division
Maryland Department of Natural Resources
Tawes State Office Building
Annapolis, MD 21401

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I. Background

The relationship among land-use activities, coastal water quality and habitat has long been recognized in the Chesapeake Bay region. As such, multiple watershed planning efforts are occurring across the State. These programs are designed to improve water quality, conserve resources, and restore habitats. Following are five watershed-planning activities, which will be important in the development of a Local Government Watershed Planning Tool:

- With the creation of the Chesapeake Bay Program Agreement in 1987, nutrient reduction became a primary goal in Bay restoration. To meet the Agreement's original goal of a 40 percent reduction in nitrogen and phosphorus, Bay Program states, including Maryland, were asked to develop tributary strategies. These strategies identified potential best management practices that could be used in individual tributary watersheds to meet the necessary nutrient load goals. Activities included stormwater management, reductions in septic system discharges, agriculture best management practices (BMP's), point source management, and air reduction. A new series of tributary strategies were identified by Maryland in 2004. Efforts are currently underway to develop implementation strategies to meet these new goals.

- The Maryland Department of Natural Resources had been working to deliver technical information to local governments to develop comprehensive management plans. This has included the Watershed Restoration Strategy (WRAS) Program. The goal of WRAS's was to target implementation, restoration, mitigation, protection, or preservation efforts at the 8-digit watershed scale (approximately 75 square miles). Local governments led the process to develop a comprehensive strategy to meet water quality, habitat, and land-use planning goals. The strategy is developed through a comprehensive process of data acquisition, followed by a review and assessment of the data and a prioritization of BMP's and sites. Tools developed and used in this program continue to be available to support local governments and for continued refinement and implementation of existing watershed management plans.

- The Maryland Department of the Environment (MDE) is the lead State agency for the development of Total Maximum Daily Loads (TMDL's) for "impaired" water bodies. Impaired water bodies are those that have excessive level of nutrients and contaminants that prevent the water body from meeting water quality goals. In Maryland, this includes the Chesapeake Bay and portions of its tributaries. Through monitoring and modeling, MDE determines the maximum pollutant load that a waterbody can receive to meet water quality goals, as defined by state and national standards. TMDL's consider both the point sources and nonpoint sources of pollution. After calculating the load and needed pollutant reductions, the TMDL is implemented by identifying appropriate BMP's. Maryland is working towards using WRAS and tributary strategies to help meet the TMDL goals.

- In addition to reductions in nutrient loads to the Chesapeake Bay and its tributaries, Maryland has multiple goals to improve habitat in the coastal zone. DNR has identified the State's "green infrastructure". Maryland's most important natural lands comprise its "green infrastructure," and provide the bulk of the State's natural support system. Ecosystem services, such as cleaning the air, filtering and cooling water, storing and cycling nutrients, conserving and generating soils, protecting areas against storm and flood damage, and maintaining aquifers and streams, are all provided by the existing expanses of forests, wetlands, and other natural lands. These ecologically valuable lands also provide marketable goods and services, like forest products, fish and wildlife, and recreation. They serve as vital habitat for resident and migratory species, maintain a vast genetic library, provide scenery, and contribute in many ways to the health and quality of life for Maryland residents. DNR is currently working to find methods to conserve and restore priority areas that have been identified as "green infrastructure" hubs (large contiguous areas) and corridors (linkages between hubs).

- Sedimentation and nutrient additions from shore erosion also impact water quality in the Chesapeake Bay. Maryland's tidal shoreline extends over 7,700 miles and approximately 69 percent of the coastline is experiencing some degree of erosion. Coastal erosion is one of the most significant problems facing Maryland's diverse shoreline, however this process also develops the fringing habitats so important to the Bay's health and productivity. The Maryland Coastal Program, in coordination with other DNR programs, has been working to improve shore erosion planning and the promotion of alternative structures that decrease sedimentation, but also enhance natural shoreline habitat and buffers. The goal is to provide shoreline information and targeting tools to local governments so that comprehensive decisions can be made to address both hazard mitigation and restoration goals. "Living shorelines" is an associated grass roots effort to address the loss of natural shoreline habitat to hardened shoreline protection methods by promoting innovative design standards to deal with shoreline erosion and sedimentation.

A key to implementing these activities is coordination with local governments. Maryland has 23 counties, which are responsible for most land use planning decisions in the State. The technical abilities of the counties vary across the State. The goal of this project is to: (1) scope state watershed data and information, (2) identify the needs of local groups, (3) develop a project plan for a watershed toolbox to be shared with local governments, watershed organizations, and other stakeholders, and (4) work to institute a component of the toolbox. The toolbox should include a variety of information. The toolbox will house geospatial data collections, track progress towards habitat and water quality goals, catalogue technical guidance documents related to watershed management planning, allow use of restoration and conservation targeting tools and provide access to the many programs, services, technical and financial resources that are available statewide to facilitate the development and implementation of watershed management plans. The tools would relate to nutrient reduction, habitat restoration and conservation. The Watershed Planning Tool should enable local governments to demonstrate how their natural resource management actions are clearly directed at maintaining and restoring the Chesapeake

and Coastal Bays water quality and living resources. This includes protecting ecologically sensitive resource areas, supporting regional and localized biodiversity, ensuring healthy watershed functions, and fueling natural resource based industries.

It is anticipated that this would be an internet-based toolbox that would present the technical information in a manner that would enable local governments to meet their tributary strategy, TMDL and local planning goals, in addition to Maryland's broad living resource and habitat goals (i.e., green infrastructure, living shorelines). The toolbox would provide the scientific basis to geographically prioritize management actions and optimize the implementation of best management practices in order to achieve the most effective use of limited resources. Factors under consideration may include how water quality, habitat and other locally relevant socio-economic and regulatory goals could best be met by using the geographic targeting capabilities expressed by this tool. Cost-benefits assessment, as a component of the planning tool, would allow user groups to develop management and implementation plans that are uniquely tailored to meet their specific objectives, while promoting the most efficient use of financial resources. Customized mapping and reporting functions would allow users to effectively present this information to their stakeholders, elected officials and other key decision makers.

In addition to creation of the tool, it is important for the information to get out to users in a manner that meets the needs of users at the local level. Local planners and managers will be consulted as the tool is being developed. A methodology will be created to share the information with local counties and municipalities.

II. Goals and Objectives

Goal: Aid in the identification of technical data available for incorporation in the Watershed Planning Toolbox.

Objective: Work with DNR and State agency staff to identify relevant geographic and other data, modeling information, existing assessment tools, outreach material datasets and other financial, programmatic and information resources for potential incorporation in the Watershed Planning Toolbox.

Objective: Evaluate the information for gaps, collection needs and quality. This information identifies potential projects needed to complete the toolbox.

Goal: Survey potential toolbox user groups and create a focus group to aid in creating and evaluating the Watershed Planning Toolbox.

Objective: Gain feedback from the diverse local governments, watershed organizations and other stakeholders to identify needs, project uses and delivery mechanisms.

Objective: Work with a focus group of interested users throughout the planning process to gain

feedback on the project information and delivery mechanisms.

Objective: Develop a framework for the toolbox that is flexible enough to meet a variety of locally based management objectives but also specific enough to meet the needs of these targeted user groups.

Goal: Develop a project plan for the Watershed Planning Toolbox.
Objective: Identify the data and information that should be incorporated in the toolbox, including current projects, need for enhancement and information gaps.

Objective: Provide a means for local government and other users to access the Watershed Planning Toolbox. This could include a web interface that is user-friendly and overcomes technology barriers that might otherwise prohibit targeted user groups from fully utilizing this decision support system.

Objective: Deliver products and management recommendations derived from the web-based tool in formats that are determined to be most useful through the focus group project. Develop an outreach plan to share the Watershed Planning Tool with stakeholders.

Goal: Lead the completion of a selected tool to be included in the final toolbox.

Objective: Identify a tool that needs completion for the toolbox and lead that creation. The selection can be based on the fellow interest and could encompass modeling, GIS, analysis, planning, etc.

III. Milestones and Outcomes

August 2005	Fellowship begins. Hold orientation with Department of Natural Resources staff. Gain general understanding of the Maryland Tributary Strategies, watershed planning, Total Maximum Daily Loads, State conservation programs and objectives and natural resource goals.
September - December 2005	Work with Watershed Services Unit staff on evaluation of geographic data, mapping, modeling, planning and outreach activities currently being done to meet management objectives associated with watershed planning.
January - March 2006	Meet with local governments, watershed organizations and other identified user groups to identify planning activities, data and information needs, and delivery mechanisms. Create Local Government Focus Group, which would include identified users.
April - July 2006	Develop a framework and work plan to build and deliver the Watershed Planning Tool to users. Seek recommendations on potential user groups

	that influence or direct natural resources management actions. Present project plan to Watershed Service Unit Staff. Prepare poster for Coastal Society meeting.
August - December 2006	Identify a component of the toolbox that is of interest and take the lead on developing it to the finished product. Depending on the interest of the fellow, this component could focus on GIS, modeling, planning, webpage design or outreach. Serve as Project Manager for entire toolbox project. Assemble toolbox team and direct the work of others to address remaining components.
January - March 2007	Continue work on the identified component. Engage Local Government Focus Group in its review. Work with the toolbox team on the development of a comprehensive website to share the information.
April - June 2007	Refine toolbox component and work with team to refine the entire web toolbox. Work to follow through on distribution activities identified in the initial meetings with user groups.
July 2007	Finalize component of web-based toolbox and work to incorporate it with other components. Prepare presentation for Coastal Zone conference. End fellowship.

IV. Project Description

Maryland has a strong emphasis on watershed planning initiatives designed to improve water quality and increase key habitats. In order for these efforts to be successful, it is important for local governments and municipalities to incorporate these goals into their planning efforts. Currently, a gap exists in providing State data and technologies to local governments in a manner that enables them to plan most effectively and to determine how implementation is helping to meet water quality and habitat goals. The goal of this project is to provide a watershed toolbox to local planners, watershed organizations and other users that will enable them to make informed decisions.

A variety of State and local personnel are working on watershed management activities, including water quality, habitat and biodiversity. The Fellow will work with these staff members to gain an understanding of data and information available for inclusion in a Watershed Planning Toolbox. Discussions should include how the information is currently shared, opportunities for including the data in a comprehensive tool and potential pitfalls. During this process, the Fellow will have the opportunity to work with the data. The outcome will be an understanding of available data and information, as well as gaps, for inclusion in the Toolbox.

Local governments are a key component in meeting water quality, habitat and ecosystem goals. In Maryland, local governments are the lead for land use planning activities. In the Chesapeake 2000 Agreement, the watershed goals have a local government focus, stating:

> "By 2010, work with local governments, community groups and watershed organizations to develop and implement locally supported watershed management plans in two-thirds of the Bay watershed covered by this Agreement. These plans would address the protection, conservation and restoration of stream corridors, riparian forest buffers and wetlands for the purposes of improving habitat and water quality, with collateral benefits for optimizing stream flow and water supply".

The ability for local governments to process the variety of information and data available for watershed planning varies between counties in the State. Larger, more urban counties often have staff to do watershed planning; while, smaller rural counties often do not have these technical capabilities. Across all counties and municipalities there is a desire to see how local efforts affect statewide goals for water quality and habitats.

To gain an understanding of local government needs, the Fellow will hold meetings with county and municipal planning staff. This effort can be done in part through coordination with the Maryland Coastal and Watershed Resources Advisory Committee and the State's Tributary Teams. During the meetings, discussion will focus on local needs, data and technical information that could be available in the tool, the relationship to management goals, and platform needed to make the tool useful and successful.

After gaining an understanding of the data, information, management efforts and local government needs, the fellow will take the lead on developing the project plan for the Local Government Watershed Planning Toolbox. The plan could include, but is not limited to, the following components: a web-based toolbox interface, specific model and mapping information on resources and water quality, customized mapping activities, data integration/uploading abilities, planning information, outreach materials, and demonstration scenarios/projects. The toolbox will take into account the goals associated with Tributary Strategies, TMDL's and habitat goals, such as green infrastructure and living shorelines.

During the development of the toolbox project plan, the Fellow will work with a local government focus group. This focus group will provide the Fellow feedback on the product and ensure that the final product is useful to the counties and municipalities. The focus group will be comprised of representatives from the various levels of local government planning divisions across Maryland.

When the toolbox plan is completed, the fellow will take the lead on developing one of the components. The Fellow will be able to choose the component based on interests. This work

will be done as part of a team that will be working toward completing and distributing the toolbox. The Fellow will also act as the Lead Project Manager in order to coordinate the overall completion of the toolbox project. This will include assembling the appropriate teams to address various components, setting timelines, and convening regular meetings among team members to gauge progress and address emerging issues.

V. Fellow Mentoring

The Fellow will be a staff member of the Watershed Services Unit of the Maryland Department of Natural Resources. The Watershed Services Unit is the Department lead for multiple planning activities, including tributary strategies, Chesapeake Bay Program coordination, green infrastructure and coastal zone management. The fellow will interact with Unit staff on a regular basis. Staff within the Unit have a variety of expertise related to watershed planning and can offer support and advice based on many years of experience in the field.

The Acting Director of the Landscape and Watershed Analysis Division of the Department of Natural Resources, Christine Conn, will mentor the fellow. This Division is responsible for analyzing geographic land-use and habitat data for restoration and conservation activities, tracking the implementation of BMP's related to the tributary strategies and is taking the lead on developing the Local Government Watershed Planning Tool. Staff within the Program has expertise in Geographical Information Systems, modeling and web design. The Fellow will work in direct coordination with this team in the creation of the watershed tool.

In addition, the fellow will be mentored by the Coastal Planning Program Manager, Mary Conley. The Coastal Program works closely with local governments and state partners in planning activities including watershed planning and coastal hazards. This expertise will help to support the development of the local government focus group and creating a strategy to educate local planners on the tool.

In addition, the Fellow will work closely with units responsible for watershed planning and team members will include the Tributary Strategies Coordinator, GIS Division and Coastal Program staff. Since watershed planning is a crosscutting issue in the State, the Fellow will also have access to staff in additional sections of the Department of Natural Resources and other Federal, State, and local agencies. This network of programs will expose the Fellow to the various programs and facets of watershed planning.

Since the Watershed Planning Tool is designed to support the efforts of local governments, the Fellow will regularly communicate with local planners throughout the State. These interactions will enable the Fellow to gain an understanding of how projects are implemented on the local scale and the relationship between State and local management activities. These efforts will be done through the Maryland Coastal and Watershed Resources Advisory Committee, the State's Tributary Teams, and creation of a Local Government Focus Group.

The Fellow will be encouraged to attend relevant meetings, conferences and workshops. These events will include coastal citizen advisory group meetings, Unit and Division staff meetings, tributary strategies, interagency meeting, Chesapeake Bay Program meetings and national meetings that correspond with watershed planning. These opportunities will allow the Fellow to gain a broad understanding of how watershed planning is implemented at the state and local levels.

VI. Project Partners

The Fellow will be located in the Landscape and Watershed Analysis Division, part of the Watershed Services Unit of the Maryland Department of Natural Resources. The Watershed Services Unit will provide space, equipment, and supplies, as well as supervision to the Fellow throughout the project.

In addition, the Fellow will work closely with a variety of partners that are involved in watershed planning. Following is a list of project partners and a brief description of their role in watershed planning:

- Tributary Strategies Program and Tributary Teams: Tributary Strategies are plans to meet the nutrient reduction goals established in the Chesapeake 2000 Agreement and restore living resources to the bay and the region. The Tributary Strategies Program works with an interagency task force to determine means of meeting the goals. Each of Maryland's ten major tributaries has a Tributary Team, comprised of local citizens, farmers, business leaders and government officials, who work to meet the strategy goals through implementation and education.
- Total Maximum Daily Loads Program: The Maryland TMDL Program is housed within MDE. The Program establishes the maximum amount of an impairing substance or stressor that a waterbody can assimilate and still meet water quality standards and allocates that load among pollution contributors. Watershed planning is seen as an opportunity to meet the TMDL goals for a specific watershed.
- Coastal Zone Management: The Coastal Zone Management Program recognized watershed planning in its most recent Section 309 Assessment and Strategy. Funding has gone towards the development of WRAS's in the coastal zone. In addition, the Coastal Program is leading efforts to address shore erosion management issues at the State and local level.
- Maryland Department of Agriculture (MDA): MDA is the lead State agency working with farmers to develop nutrient management plans in agriculture areas. These plans identify BMP's that can be implemented. On a local scale, Soil Conservation Districts work with local landowners to implement BMP's.
- Maryland Department of Planning (MDP): MDP is the State lead for working with local government on land use development. MDP is also the source of landuse maps for the State.

VII. Cost-Share

The Coastal Zone Management Division of the Maryland Department of Natural Resources will provide the Fellow with in-kind support in the form of a computer, software, hardware, office space, transportation, necessary training, office supplies, mailing, phone and secretarial services for both the first and second year of the fellowship. In addition, the Division will commit $15,000 cash ($7,500 per year) from non-federal funds to provide for the fellowship match.

VIII. References

Chesapeake 2000 Agreement:
http://www.chesapeakebay.net/agreement.htm

Maryland's Green Infrastructure Assessment:
http://www.dnr.state.md.us/greenways/gi/gi.html

Maryland Tributary Strategies Executive Summary and Tributary Teams:
http://www.dnr.state.md.us/bay/tribstrat/index.html

Maryland Surf Your Watershed Website:
http://www.dnr.state.md.us/watersheds/surf/index.html

Maryland Watershed Restoration Actions Strategies Website:
http://www.dnr.state.md.us/watersheds/wras/